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ABSTRACT

How teachers restructured their professional knowledge (PK) was studied using data from a Tel Aviv (Israel) University workshop for experienced writing teachers that was designed to change their professional orientation from technical rationality to reflection in action. Workshop participants included 18 teachers with 10 to 35 years of teaching experience. Four learning events (LEs) were identified in the data: (1) students' and teachers' awareness of the writing process; (2) the ownership of school-based learning; (3) the subjectivity of objective evaluation of students' writing; and (4) the teachers' change experience. The significance of these LEs for teachers' change was validated using reports from the teachers and two observers. To analyze the LEs, a method was devised for looking at excerpts of the group discussions from the viewpoints of: content; structure; and logic. This triangulated method of analysis focused on clarifying interrelated aspects of the complex notion of restructuring PK and of reflection in teacher training, determining their actual contribution to the growth of teachers. Participants learned to interact in a manner that was relevant to how they taught. By challenging others' viewpoints, participants initiated their own moves toward the reframing of the discussion and the restructuring of their own prior beliefs. Two figures, 8 tables, and a 42-item list of references are included. Four appendices provide samples of workshop discussions for the four LEs. (SLD)

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How teachers restructured their professional knowledge: A triangulated analysis

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Abstract

This is a triangulated analysis of how teachers restructured their professional knowledge. It draws on data from a Tel Aviv University workshop for experienced writing teachers designed to change their professional orientation from "technical rationality" to "reflection in action" (Zellermayer, 1989; Zellermayer, 1990). Four learning events were identified in this data. Their significance to teachers' change was validated in reports from the participants and from two observers.

For the purpose of analyzing the events, we devised a method of looking at transcripts of excerpts of teachers' group discussions from three different points of view: content, structure and logic. This triangulated method of analysis aimed at clarifying three different but interrelated aspects of the complex notion of "restructuring" professional knowledge and of "reflection" in teacher training determining their actual contribution to the growth of teachers.

Background and Rationale

Many of the educational changes attempted in the eighties were motivated by the ideal of "the reflective professional" or "reflection-in-action" (Schon, 1984; 1987). They emerged from the understanding that schools must teach students to function competently in situations where there are no right answers or standard procedures. Accordingly, the competent teacher would model the recognition and solution of new problems on the basis of known procedures and would reflect on these improvisations. Teachers trained in "technical rationality" are presumably often incapable of doing so, and therefore need to be re-educated in the new paradigm.

In the domain of writing instruction, such ideas have supported the "revolutionary" change from teaching the written product to teaching the writing process (Hairston, 1982; Scardamalia & Bereiter, 1986). The philosophy behind this "revolution" is that irrespective of content or subject matter, the writing teacher must concentrate on guiding students in problem-solving. Writing teachers encounter a multitude of situations for which they couldn't possibly be trained, and for which there could be no direct answer in a textbook or in the curriculum. To be effective, therefore, they must have flexible access to a wide range of mental representations of actions and of conditions affecting the plans for these actions, as well as a sophisticated control structure for coordinating operations in this indeterminate zone of practice.

This view of writing instruction is very different from the traditional one in which teachers prescribe rules for an ideal text and expect students to follow these rules. The two views differ in goals, expectations, intervention foci, task ownership, teacher's responsibility, task source, responsibility for problem solving, evaluation criteria and incentives for teacher and students. (See Table 1 below for a comparison of the two.)

Insert Table 1 about here

Table 1 illustrates that the two ways of teaching exemplify radically different views of reality. Schon (1987) refers to a "constructivist view", in which teaching is continuously constructed and reframed by a teacher who is forever engaged in a learning process. Unlike the "objectivist view" in which the teacher accepts facts as they are, the truth of the beliefs is strictly testable, and all disagreements are resolvable of the foundation of facts, the "constructivist view" calls for teachers to hold reflective conversations about texts with students and their peers. While doing so, the teachers reveal the usually tacit processes that underlie their practice. Because their students can observe or even participate in the inquiry,

writing theorists (e.g., Bereiter & Scardamalia, 1987b) expect these students to attain "high literacy" or higher-order skills in reading and writing.

This new view assumes that it is not enough to expand the teachers' knowledge of subject matter or to supply them with specific teaching plans; in addition, their reflective abilities must be developed. Theorists are becoming increasingly convinced that writing teachers must experience the tasks they give in class. For example, they must see for themselves how peer and coach interventions feel when they write. On the basis of this experience, they must be encouraged to try such interventions in class and to reflect upon their consequences (Goswami & Stillman, 1987).

Researchers of teachers' cognitions insist that such expectations of teachers in training arouse different expectations of teacher trainers as well. They claim that those involved in teacher training must study more closely the teachers' processes of world-making and situation reframing. This requires an understanding of how teachers think about practice, and how they reorganize their professional knowledge while dealing with various tasks during training and in practice (Clark & Peterson, 1986). The topic of teacher cognitions has inspired numerous recent studies (see the review by Kagan, 1990). Many of these studies developed special elicitation techniques to assess teachers' beliefs about teaching, students and the school situation. Others (e.g. Richardson, 1990) initiated an action and studied teachers' response to that action.

We, like Richardson (1990), decided to start with an action with a specific group of teachers, and assess their cognitions in the phases of that action. It aimed at causing a radical restructuring in the professional knowledge and attitudes of these teachers, so that they could move toward the new paradigm. The results (Zellermayer, 1990) indicated that there were significant changes of attitude as well as a reorganization of professional knowledge and that on the whole the teachers adopted important notions of reflectivity. Subsequently, however, another research question emerged: How did these teachers change, and how did they adopt notions of reflectivity toward their teaching?

Theoretical Framework

The notion of changing from "technical rationality" to "reflection-in-action" and educating the reflective practitioner has three basic premises: first, that such change is a reframing process in which practitioners transform and restructure their old professional knowledge, rather than abandon it; second, that such a change process entails critical inquiry; and third, that this transformation is a social process. The following discussion will explain how, on the basis of these premises, we constructed the triangulated analysis for tracking these teachers' change process.

Change as reframing

Schon declared that in order to describe the movement from one paradigm to another, such as the change from "technical rationality" to "reflection-in-action", we must view it not as an abandonment of one's old professional knowledge but as a reframing of that knowledge. This implies that in order to study such change we must identify warrants and beliefs that characterize the old knowledge and look at how they are transformed into a new set of beliefs. This claim could be supported by Kuhn's (1970) moderate version of scientific revolutions, and by the idea that revolutions do not occur through a drastic pendulum swing to an opposite belief, but through a series of gradual transformations of thinking during which one becomes increasingly aware of data supporting the other paradigm (Toulmin, 1972). In fact, schema theory has established that all new knowledge is acquired through our ability to connect it to an existing body of knowledge (Anderson, 1977; Rumelhart, 1980, Wittrock, 1981). Such a process is never merely additive, in which new knowledge is attached to old knowledge, or even a modification of an underdeveloped conceptual structure; making connections between the old and the new inevitably transforms our knowledge base and forms new conceptual models.

Vosniadou & Brewer (1987) state that "restructuring represents the most radical form of knowledge acquisition within a prior-knowledge framework" frequently associated with the radical changes in knowledge that appear to occur with age or expertise. They accept Carey's (1985) view that restructuring is domain-specific, and that it is a product of an increased knowledge of the domain brought about by experience or instruction. They distinguish between weak restructuring "involving the creation of new, high-order relations between existing concepts" and radical restructuring "involving a fundamental change in schemata, similar to paradigm shift in the history of science." Radical restructuring such as paradigm change should be examined to determine what changes occur, whether these changes can be described in terms of weak or radical restructuring, and what mechanism can account for the observed changes.

We looked at studies of radical reframing by the anthropologist Bateson (1972); by his followers, the psychologists Watzlawick, Weakland and Fish (1974); and by the social psychologist Goffman (1974). They describe a social process in which episodes are initially structured by participants in a way determined by their shared point of view. But gradually, the episodes are reframed both as a cause and as a result of the interaction taking place. Reframing begins when a participant comments on the way that he or she has been looking at the events and interpreting them--thus causing a break in the framing of the event for all other participants, leaving them a little less defended than before and more open to what follows from a new point of view.

Goffman discusses this phenomenon in depth and supports his theory with numerous examples from the theater and the cinema. In many of these examples, the protagonist comes out of the scene in order to comment on it--thus causing the audience to compare two kinds of realities constructed by the actor before and after that comment. It is a self-reflexive move that causes the spectators to reconsider the basis for their first frame as well as their own ways of constructing reality. Watzlawick et al. (1974), who describe such social episodes as part of everyday activity, claim that the reframing process is necessary for problem formation and problem resolution. They distinguish between first-order change, in which the individual changes, and second-order change, in which the social system changes together with the individual. In order to reframe an event for other participants or for the system, a participant must use the same language as they do and take into account the views, expectations, reasons and premises of those whose problems are to be changed. The reframer teaches the surprised members of the group a different game for which the available rules, facts, theories and operations are no longer applicable--thereby making the old game obsolete. This concurs with Schon's (1987) view that a practitioner in the process of change responds to unexpected anomalies by restructuring some of her strategies of action, theories of the phenomena, or ways of framing the problem, and invents on-the-spot experiments to put the new understanding under test.

This description of reframing drove us to start out with an attempt to identify the teachers' old beliefs about learning and teaching and about the situation, and subsequently look for specific episodes where participants of the group attempted to teach the other members of the group a different game or a different way of looking at reality. Our content analysis followed their moves and compared the two perspectives of the group before and after each event so that we could trace the series of transformations that led to the ultimate change.

Critical Inquiry as a Mechanism for Reframing

One of Schon's most important claims is that the move from "technical rationality" to "reflection-inaction" depends on critical inquiry. Similarly, other learning theorists (e.g., Anderson, 1977, Nussbaum & Novick, 1982) believe that change depends on recognizing anomalies and inconsistencies in the old paradigm, and on conducting a dialogue with the two bodies of knowledge (Collins, 1986). But how does critical inquiry function as a mechanism for reframing knowledge and beliefs?

Toulmin (1958 & 1972), perceives critical inquiry as the most important instrument for generating knowledge, and stresses that it is the main mechanism for conceptual change. Toulmin (1972), like the above-mentioned social and cognitive theorists, does not believe in drastic revolutions of human thinking. For him, change is part of an evolutionary process in which ideas are challenged in order to create new disciplinary insights and beliefs, and

knowledge is reorganized by means of human interchanges. For Toulmin (1958), an argument is a critical and cooperative instrument of investigation. He perceives critical inquiry as an informal process of logical self-consciousness by which, in view of coming data, the participants examine the relationships among the given context (the frame), its premises and the new data. As opposed to formal analytic logic, Toulmin's conception of critical inquiry underscores the importance of everyday substantive logic practiced in various fields of action. His model of informal logic describes warrants that connect data and conclusions. He says that for everyday logic it is enough to say that a warrant has worked or not worked in a particular field of knowledge, in order to draw the necessary conclusion . Moreover, he claims that such a procedure is central to knowledge restructuring. It is through the critical interaction of arguments that knowledge is generated, tested and acted upon.

Toulmin's model has not been widely used for describing actual moves of successful or unsuccessful episodes of critical thinking by teachers. The reason may be because most instances of critical thinking in social interactions involve more than two participants, and their analysis would require an adaptation from the logic of arguments to the logic of argumentation. In addition, it is not clear on what premises, a participant would conclude that a warrant has or has not worked within his or her field of knowledge. Miller (1987), who adapted Toulmin's model to group discussions, explains that the logic of argumentation is concerned with cooperative attempts to define the legitimate claims for the validity of collective statements and the ways in which these claims can be defended. Miller describes argumentation as the presentation of two mutually exclusive views, followed by the finding of a structural solution on the basis of co-construction of negations by the members of the group. It is a contradiction they have created themselves, and it determines their ascension to a higher level of knowledge. Such a process depends on the group's adherence to three cooperative principles of argumentation: generalizability, objectivity and consistency. Generalizability formulates tenability and relevance which make a statement collectively valid or invalid. Objectivity determines the difference between what is arbitrarily true what is objectively true. Consistency detects contradictions in the collective statements.

On the basis of Toulmin's model of logic and Miller's adaptation of Toulmin's model, we set to identify the implicit beliefs that lead the group participants to make claims about learning and teaching on the basis of specific data and draw logical conclusions from them. In addition, we describe the extent to which the group adheres to the three cooperative principles and what happens when they don't.

The Social Aspect of Reframing

A central premise of the above claims is that learning and change are synonymous because they serve as both the cause and the effect of the transformation of experience. Bateson

(1972), for example, devised a theory of logical types in which learning is described as a change in the process of learning in itself, or a change in the way that a sequence of events is punctuated for the participant. His implicit assumption is that such a transformation is a social process, because events include participants and are based on the social interactions of these participants.

The same claim is made by Vygotsky (1978) who views learning as a transformation entailing the decontextualization of experience through social interaction. Such activity serves as both context and scaffolding for the learning process in an person's zone of proximal development (the cognitive zone where learners can function as experts with the support of their tutor or peers). A function appears first on the interpersonal plane, supported by social interactions with the tutor or peers; then it is internalized to the intrapersonal or intrapsychological plane. This implies that thinking may very well be a function of groups as well of individuals, and that thinking in groups is necessary for reframing experience so that it can be internalized. There is thus an inherent connection between the two planes of action--the group and the individual. According to Vygotsky, this connection is not linear. Vygotsky, like Bateson, perceives learning as a reflexive process: "It goes without saying that the internalization transforms the process itself and changes its structure and function." (1981, 163)

Following Bateson and Vygotsky, the assumption that reframing entails restructuring and repunctuating the learning events, has been discussed extensively by the Vygotskian school of thought. These sociocognitive activity theorists (e.g., Leont'ev, 1981; Wertsch, 1985; Griffith & Cole, 1985) describe reframing as a social process in a learner's zone of proximal development, where such events acquire their structure through social interactions between learners and tutors, learners and peers and learners and texts. Two things happen in the developmental process, where interpersonal interactions become intrapersonal faculties. One is risk-taking by the learner; the other is reflection on this risk-taking by the tutor or peer (Wertsch, 1985).

Because most of the above studies are based on data involving early childhood, the application of activity theory to adult learning is still quite problematic (Scribner, 1990). However, this paper will show that the risk-taking and reflection principles of early development identified in mother-child dyads can also be traced in the collective argumentation of adult learners.

In order to show how the reframing process is formed by means of social interaction and critical inquiry, we devised a triangulated method of analysis focusing on content, structure and logic. The content analysis describes the conceptualization of "reflection-in-action" in the teachers' professional knowledge. It identifies themes and dilemmas brought up by the

participants, and assesses their coherence in terms of the paradigm of "reflection-in action" as opposed to "technical rationality". It shows how the participants reframe or decontextualize the experience of the workshop during a change from "technical rationality" toward "reflection in action".

The structural analysis draws on sociocognitive theory to illustrate how the teachers construct their own learning by means of social interaction. Following Wertsch (1985) and Griffin and Cole (1985), we look at the participants' roles in the reframing process, and at how these roles became conventionalized as the group's learning progressed.

Modeled by Miller's adaptation of Toulmin's informal logic, the logical analysis tracks the teachers' warrants and shows how they gradually refine their abilities for critical inquiry by explicating their warrants and by making sound connections between their data, claims and conclusions.

The Study

The present study was embedded in a specific action we took with a group of writing teachers at Tel Aviv University during 1987/8 in a year-long in-service training program for teaching the writing process. The group consisted of 18 teachers with between 10 and 35 years of teaching experience from various schools. They were referred to the program by the Ministry of Education, which identified them as experts in the field of writing instruction.

In a preliminary investigation (Zellermayer, 1990) we interviewed prospective participants, in order to assess their pre-action views. Table 2 summarizes the beliefs they expressed when entering the in-service program; it illustrates their general discontent with their achievements and status, their students' achievements and the support they were getting from the educational system.

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insert Table 2 about here

Although the teachers were experienced and held a relatively high status in their field, they suffered from low self-esteem. They felt they were doing something which had no prospects, and for which there was no relevant body of knowledge, curriculum, teaching materials or evaluation scales. In addition, they felt that writing was an innate ability which could not really be affected by instruction. These attitudes were concurrent with Schon's description of professionals trained in "technical rationality".

Thus our action was complex. It consisted of a weekly workshop during one school year. It included Joyce and Sower's (1982) components for inservice education: theory (teachers read and discussed theoretical papers on writing instruction), demonstration (occasional visits of teachers who talked about their teaching or demonstrated certain techniques by

means of videotaped samples of their classroom activity), practice (teachers practiced school-based writing), feedback (they gave each other oral or written feedback to their writing) and in-class application of the tasks their experienced in the workshop. In addition, we insisted that the participants collect data on that activity, report of that data in the workshop, and encouraged the other participants to respond to that report.

The four events described in this study occurred in a segment of the program in which the teachers reported their attempts to incorporate new ideas from the workshop in their teaching. These reports were normally on a voluntary basis. One or two teachers offered to tell about their class experiences, and several others reacted. At the beginning of the program, most felt rather uneasy about exposing themselves in front of the other participants, but in time, they became increasingly active in these discussions.

We went over the transcripts of the previously audiotaped meetings of the workshop. While doing so, we realized that the participants' developmental route could be traced in their discussions of the in-class application of the workshop tasks. The study examined four excerpts of transcribed audiotaped group discussions.

The four excerpts (Appendices 1-4 translated from Hebrew by the researcher) were selected from the 200-hour transcripts, because they incorporated events, in which teachers reframed their professional knowledge. The significance of these events to teachers' growth was validated by two judges on the basis of dialogue journals written by the teachers to their coach, notes taken by an observer, and open-ended interviews.

These events were treated as units of analysis for tracking problem-solving processes in the the workshop tasks. The group of teachers constituted a total body of knowledge or a total belief system. We wanted to describe the aggregate effect of the program on the teachers; no attempt was made to trace the development of individual participants.

The Content, Structure and Logic of Four Learning Events

In our data, a learning event is something that actually happens to people who interact at a certain time and place. It is a part of an unsolicited discussion structured by the participants to conceptualize the relationship between what they think and feel and what they do. It opens when a participant presents data. The data is immediately recognized as deviant from the normal contours of the scripts that the participants know. Because it violates expectancy, it triggers the monitor of the participants--calling for an evaluation of the new hypothesis, and creation of a new theory if the hypotheses is not rejected. These events can be definitely identified, because their participants express surprise or challenge the deviant phenomenon in a way which engages them actively in the problem-solving process.

The four learning events focused on four general topics: students' and teachers' awareness of the writing process; the ownership of school-based learning; the subjectivity of

'objective' evaluation of students' writing; and the teachers' change experience. The content analysis shows how, within these specific topics, they conceptualized some of the major conflicts of the two paradigms.

Their learning events--very much like the initial learning of a child--consisted of a particular learning structure designed by the teachers themselves. The two main steps identified in mother-child interactions--risk-taking and reflective assessment-- have also been taken by the teachers. The structural analysis exposes this particular structure in each of the events. It illustrates how, by means of these two steps, the teachers used the group discussions, to confront and reframe their old notions about writing instruction and about students' learning, and how, while doing so, they also refined the structure of the events.

Each of the episodes we have isolated is a collective argumentation (Miller, 1987). In each, there is an attempt to find a collective solution to an interindividual problem of coordinating between the two paradigms of professional knowledge. The attempts are not always successful. The logical analysis of each identifies the participants' claims about their data, and tracks explicit and implicit warrants on which these claims are based in order to show what makes them succeed or fail. In order to illustrate why some of these argumentations fail, the analysis compares the actual argumentation with an 'ideal' argumentation devised by us on the basis of Toulmin's model.

Event 1 (Third meeting): On Teachers' and Students' Awareness of Their Own Writing Processes.

Background

The first event (see full transcript in Appendix 1) took place at the third meeting of the workshop. At the two meetings prior to this event, it became apparent that the teachers suffered from a strong 'blame the client' syndrome; they consistently blamed students for their difficulties, saying that "the students have no general knowledge" or "they have nothing to write about." They resisted the intervention, which was not designed in the top-down manner as they expected, and did not provide exciting ideas for classroom use. They were especially uncomfortable with the school-like reading and writing tasks they were asked to perform in the workshop. They said: "We feel coerced. This is no longer a part of our lives now." At the same time, they expressed uneasiness about sharing their writing with the group. One teacher said: "To expose myself in front of people that I don't know...is difficult." And another: "I feel terrible. I want to jump in and get it over with."

In the third meeting, based on data collected from their students, they were asked to provide an oral description of their class and of the ways their students dealt with writing assignments. In spite of their initial resentment against the task, several said their data were interesting and worth sharing with the group. One participant (Y.K.) opened the discussion

by saying: "I wanted to take advantage of the task for this workshop, and presented it to my class as a writing assignment. I gave them a list of questions they could refer to about their writing processes, and said: 'I have a problem. I have a task for a class. I need your help.' I told them that they did not have to write their names, and that they could include criticism of the writing classes... I managed to persuade them to write. I have a number of unexpected responses here". She read aloud a composition by a student who, she said "is intelligent but has problems in academic writing". It was the student's account of her own difficulties in writing for school as opposed to writing outside school. Although her school writing is generally very poor, in this text she described her writing process in a surprisingly coherent and interesting way. The discrepancy between the two became the main topic of the teachers' discussion

Content

The first question raised by the group is: how is it possible that the writer of such a well-written text has a difficulty in school writing? The teachers suggest that the text is but a product of the student's heightened awareness of her own writing process in response to the specific task. A. Z. comments that, in fact, the student's understanding of her own writing process is better than that of the teachers'. However, the relationship between writing abilities and self-awareness is not developed any further. Instead, in search of a suitable intervention, the teachers divert their attention to "diagnosing" this student's writing problems; this is soon dropped with the excuse that diagnosing learning difficulties is not within their professional domain.

From a theoretical point of view, two important issues are implicitly raised here by the participants: the relationship between metacognitive awareness and writing ability, and whether instructional intervention should be based on the student's ability or disability. These are central concerns of the two theoretical paradigms. At this point, the teachers are only intuitively aware of the paradigms and are unable to elaborate. Two views of teaching are suggested in relation to each of these concerns: in one, the significant product of teaching is the students' text, and the teacher's orientation is to intervene at the place where the student has most difficulty; in the other, the major product is the students' metacognitive awareness which in time will affect the text, and the teacher's orientation is to intervene where the student feels most comfortable. At this point the group is looking at teaching from the first perspective, while Y.K. and A. Z. are the only ones who show intuitive awareness of another frame. Y.K. explains how she has become aware of the other frame: since the written response is a deviance in the student's normal behavior, Y.K.'s monitoring system has been alerted; as a result she now doubts her own understanding of the student's situation. The other teachers, however, perceive the deviance as an artificial and meaningless

response to the fact that the student's sensitivity has been heightened. Because the teachers know what they should be looking for in the written product, but not in the process, they are not yet able to assess the student's self-criticism as a sign of control of her own writing process--an important achievement in learning to compose.

But since Y.K. now sees the student from a new perspective, she wants to know how to proceed with her. Two options emerge: to change her viewpoint of learning and instruction, or to hang onto the old frame. Although Y.K. shows signs that she would be happy to try something new, she does not know what this could be and is therefore very hesitant about her own ideas. The rest of the group, whose monitoring system has not yet been aroused and who do not yet doubt their old remedies, attempt to "diagnose" the student's problem in order to suggest intervention where she has the most difficulty. Y.K makes another attempt to resist their view of the situation. She suggests that the student should be encouraged to do what she likes and is able to do. But her suggestion is not given attention. It is quite clear that at this point the other teachers perceive only one world view--their own. As a result, they don't even understand the questions raised by Y.K. and do not respond to them. Because they do not understand that this student's problem arises from the wrong treatment, they propose to give her more of the same. Yet they do not trust their own judgment, and say that such questions are not really within their domain.

Structure

Although the structure of the event is quite fuzzy, two significant protagonists can be identified: Y.K., the risk-taker, and A. Z., the reflective-assessor. Clearly, this was a risk-taking episode for Y.K. She presented herself to her students in a new way, revealing to them that she was participating in an in-service program and needed their help for a task given in that program. She also took the risk of exposing herself and her classroom experience in front of the workshop participants in a problematic manner. She was the first to bring classroom data as evidence for a difficulty *she* had and for which *she* needed help. In response to the risk-taking move, A. Z. came up with a reflective assessment of this part of the event: "The student's self-criticism is harsher than our criticism". This assessment connected the teachers' initial difficulties in describing their own writing processes, the risk-taker's initiative and the student's writing--by comparing the student's writing and self-awareness with those of the teachers. It was as if she said: "This poor writer has done a better job of describing her own writing process than we have, and this may indicate that the problem is ours, and not so much hers". She reframed Y.K.'s account of her direct teaching experience, making it a trigger for introspection. This was an important opportunity for the teachers to reflect upon their "blame the student" attitude, by making an analogy between their own difficulties in writing for the workshop and the student's expressed difficulties in

writing for school. However, the trigger had no effect; no one continued this line of thought. For a while, it seemed that Y.K. would make another effort to push the discussion in the right direction. She insisted that the topic was right for the student. Ignoring this claim, V. M. suggested that the student needed a plan. Y.K. could then have pushed this idea further by saying that the student needed additional opportunities to write about topics that were right for her, but she did not.

In the second part of the event, the discussion disintegrated. The teachers avoided a problem-solving discussion of their own difficulties, as was briefly suggested by Y.K. and A. Z., and focused on the difficulties the student had described in her own writing process. At this point, the teachers viewed the student's difficulties as a separate topic of discussion unrelated to their own learning process. As a result of this separation, the meeting ended with the group still unable to reflect on the event and perceive any implications about writing instruction. It was not surprising that the teachers claimed that the problem was beyond their scope.

Logic

Analysis of part 1 of the event:

In the content analysis, we pointed to two important observations. First, the student had written better than before, because her awareness had been sensitized. Second, the student related to the task better than the teachers did. Although these observations were not sufficiently developed, and were not used by the teachers for collective argumentation, we feel that the event has important ingredients for learning. In order to explicate their potential, Table 3 shows two lines of argumentation: the actual route taken by the teachers and the ideal route of critical inquiry that could have been taken if the teachers had been more prepared to follow their own observations.

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insert Table 3 about here

Two explanations can be suggested for the teachers' failure in critical inquiry. One is that because of a lack of a sound theoretical basis, they were not aware that the two views of teaching presented by Y.K. and by them are mutually exclusive. Another is that because the participants were not yet ready for critical inquiry, they did not examine the warrants which could support such data and the conclusions that could be drawn from them.

Analysis of part 2 of the event:

The second part of the event can be characterized as two voices expressing different warrants for the same data. Because these warrants were not explicated, there was no real argumentation. Table 4 juxtaposes the actual discussion with an ideal argumentation that

could have been developed had the teachers had a stronger theoretical background and more command of critical inquiry.

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insert Table 4 about here

In the actual event, Teacher R.S. observes that the student has a problem. She is having difficulty in writing in the content areas (biology), and not at this particular writing task. R.S.'s implicit warrant is that the biology task is intellectually more demanding and needs more effort than does the student's description of her own writing process.

Another voice (that of the risk-taker) starts saying that the difference between the two tasks is in their topics, that it is easier to write when the writer herself is the topic for the task. But her warrant (that writing about one's own experiences is easier) is never explicated, and her argument does not reach a conclusion.

In the ideal event, by means of the teachers cooperative efforts, they manage to set a problem for inquiry, explicate their warrant and reach a conclusion.

Discussion

The construct of "the reflective practitioner" (Schon, 1983) allows us to look at this event within the framework of dilemmas that practitioners normally have in transition between "technical rationality" and "reflection-in-action". One such dilemma is how to connect between the clients' problems and the practitioners' problems. In our data, the teachers cannot relate their students' problems to their own professional problems. They make negative attributions about the student whose writing they review, and take them at face value. Schon would probably say that these attributions are made mainly for defensive purposes within the privacy of their own objectivist conception of learning and teaching. In spite of repeated challenges by Y.K. and a challenge by the reflective-assessor, they are not yet ready to put these attributions to a test. Schon (1987) explains that such a behavioral world inhibits reflection and learning.

Another problem these teachers have, typical of practitioners of "technical rationality", is that they are experienced in problem solving but not in problem setting. As a result, they discuss a student's "problem" without making a serious attempt to define a problem for the discussion. Not having clarified the student's source of difficulty, nor their own difficulty in identifying it, they offer solutions to her "problem". They seem to compete in coming up with the best cure, without allowing each other to complete one thought or to fully elaborate one solution. They never really use the discussion to construct and juxtapose different descriptions for the same phenomenon. For this reason, they drive each other round in circles.

Consequently, one may question whether this episode, which does not achieve critical inquiry, is a learning event at all. In our view, the event has a learning potential because the other paradigm begins to emerge. Although the teachers do not face the other paradigm consciously, or make any serious attempt to compare what the two kinds of professionalism offer, the pattern of the learning event itself is created. It is a two-step structure taken by two significant participants: the risk-taker and the reflective assessor as illustrated in Figure 1.

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insert Figure 1 about here

Within the pattern described in Figure 1, the teachers discover the relevance to their growth of the transaction between their two contexts of action--the workshop and the school. This new way of looking at their own activity, will enable them to repeat and refine the acts of risk-taking and reflective assessment. The following events show that through this two-step structure the two contexts of action eventually unite as the teachers' zone of proximal development .

Within this zone, the classroom tasks suggested by the workshop will help them discover their students' perspective and potential--and they will also learn that a student's response is relevant to their own development. In a spontaneous interview with several teachers after this meeting, one of them said to the participant observer: "I seriously considered dropping out of this workshop because I did not see its relevance to my needs, but today, after I read my students' responses, I decided to stay"

Event 2 (eighth meeting): On the Ownership of School-based Learning.

Background

The second event was identified in the eighth meeting of the program, at a critical stage where, for the first time, teachers confronted their own assumptions about the control and ownership of school-based learning and began to see issues from a new point of view. The crisis can perhaps be best understood by means of a detailed description of their confrontation with a visitor (Y.C.), who described how she taught writing. Y.C. said she used no textbooks, but directed her students' learning through correspondence in dialogue journals. Y.C. talked enthusiastically about her students ownership of their own writing, but several members of the group had strong reservations about her way of teaching because they felt it lacked structure and control (Appendix 2).

Content

The question of teacher control vs. student ownership is central for teaching the writing process. The teachers are familiar with the question in theory, but cannot conceptualize its practical implications for their own teaching. Their problem comes to light

when the visitor talks about the significance of the teachers' acting as an authentic audience for students' writing. They bring up the limitations imposed on their teaching by the matriculation exams, as if trying to say: how can we encourage students' ownership of their learning when we are not owners of our own teaching? They do not ask themselves why they feel that the two demands (to serve as an audience and to prepare students for matriculations) are mutually exclusive. When the visitor persists that the two demands can be met simultaneously, the difference between her conception of teaching and theirs becomes even more pronounced.

On the basis of their interactions with the workshop coach as well as with theoretical papers on responding to students' writing, several of the teachers have already tried some informal corresponding with their students. They have had experiences indicating that their students respond better to the visitor's way of teaching. They understand that keeping dialogue journals is not the main issue. They know that they are actually talking about being able to release control of their students' learning. Yet what such ownership means in terms of their students' learning, their own teaching orientation and the curriculum, is still difficult for them to conceptualize. In order to be able to do this, they admit, they need to experience a metamorphosis.

They evidently have reached an understanding that they must reframe their point of view in order to experience a real change. They themselves suggest the different points of view to replace their own: that of the learners and that of the teachers' personal satisfaction. But at this point, these options are still distant and abstract. They do not yet form a theory of action.

Structure

The typical two-step pattern of the teachers' learning events appeared when the group condemned the visitor's way of writing instruction as not "controlled" enough and a risk-taker (V.M.) told the visitor that she envied her students. This shift to the students' perspective triggered the reflective assessor (A.Z.) to join the discussion and turn its focus to introspection with some generalization on the situation: "We need to experience a metamorphosis!"

It was clearly the group's discussion and especially the comment by Z.B. ("We are captives of our own misconceptions") which facilitated the intervention of the risk-taker. The reframing process began when Z.B.'s comment caused a break in the framing of the event for the other participants, leaving them a little less defended and more open to see what followed from the new point of view. It culminated when the reflective assessor (A.Z.), who had formerly expressed conflict with Y.C., made her reflexive comment expressing the need for change.

Logic

In this event, critical inquiry is far more developed than before. Classroom data is presented by both parties, and a number of claims arising from this data are discussed and opposed. The relationship between the data and the claims and counterclaims is described in Table 5. Because this relationship is sometimes based on warrants that are not fully explicated by the participants, we have added several explications in italics.

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insert Table 5 about here

Table 5 demonstrates that the mode of argumentation is polarized. Y.C. presents data and claims based on that data. The rest of the group presents counterclaims. These counterclaims fail when A.Z. is unable to support her own statement: "As a teacher, you should never say 'Because I felt like it'."

It is then that Z.B. realizes that A.Z.'s statement is not collectively tenable, so her whole argument is invalid. What follows is a total turn in the direction of the argumentation. Other teachers bring forth new data which supports Y.C.'s claims. When their warrants are explicated, it becomes clear that the claims made by Y.C. and the counterclaims formerly made by the group are mutually exclusive. Subsequently, through this negation, the reflective assessor reaches the conclusion that the teachers would need to undergo a transformation.

Discussion

At this point the teachers are very well aware of the two ways of teaching, but they experience them as polarized and unbridgeable.Unlike in the first event, they are able to elaborate on the two different world views and explain the differences between them. They experience the two worlds as arousing conflicts which they are not yet able or willing to resolve. These are conflicts between the new values they are in the process of discovering, and the values expressed by the system to which they belong. But while holding onto their old views, they start to see a way out. They already know that in order to take it, they would have to abandon certain principles governing their teaching. But they are not ready for such a commitment.

Thus, this event is a step forward for these teachers in the way they structured the event and in the capacities they displayed for critical inquiry. In contrast to the first event, they explicitly pose a problem and discuss its implications. The focus of the interaction becomes an object of reflection in its own right. The teachers reveal some of their tacit warrants as well as data supporting the other paradigm. And while doing so, they reflect upon their own point of view.

The significance of this event is that, for the first time, a problem is posed for the teachers. This problem asked by Y.C.: "What is wrong with responding to students the way you feel?" is fully contextualized. It is taken from the teachers' own claims, and the teachers react by making a serious attempt to confront it. Although there is no readiness yet to work toward a solution of this problem, the teachers, for the first time, treat the problem as their own rather than their students'. They are aware of what their problem is and of what they would have to do in order to solve it.

Event 3 (twelfth meeting): On the Subjectivity of the 'Objective' Evaluation of Student's Writing

Background

Another learning event was identified in a session devoted to developing procedures for holistic evaluation of students' compositions (Appendix 3). While going over samples of her students' writing, S.G. explained her criteria for evaluating a certain text. She said she did not like it because it was "very short, undeveloped and unconvincing." Her remark was challenged by the rest of the group for its 'subjective' nature, and because it was based on criteria not 'objective' enough for evaluation. They said they needed "an evaluation scale that would stand by itself". S.G., on the other hand, suggested a class-based evaluation procedure, where the 'ideal text' would be chosen from the class's writing.

Content

Two problematic remarks are made here by the teachers: one, that evaluation should be objective; two, that evaluation problems are unique for writing instruction. The following analysis discusses the significance of these two remarks.

At this point, guided reading has made the teachers aware of the theory of writing instruction--particularly its emphasis on formative evaluation and on responding to students within their level of development. On the basis of this theory, S.G. is the first to construct a new approach to writing assessment, in which an evaluation scale is constructed for each class at each phase of its development. While she manifests a new constructivist approach, the other participants still hold onto their old objectivist view of teaching. Unlike S.G., they are unable to extend ideas about formative evaluation to writing assessment. Above all, they cannot accept decision-making as a subjective procedure depending, very often, on the acceptance of conflict and ambivalence as an integral part of the process.

This inhibition is significant for their development. It underscores their need to develop an awareness of their own biases as well as of the nature of subjectivity in general (Peshkin, 1988). The discussion gives the participants the opportunity to do both. In the next event, they are able to describe how they realized that teachers, like other practitioners,

must face their own subjectivity and act according to their understanding of what it means for them and for their students.

Structure

This event, like the first one, began when one teacher (S.G.) volunteered to provide examples from her students' texts for good, intermediate or poor writing. Again it is the participant presenting the data who took the role of the risk-taker. Her examples generated a group discussion about her "subjective" evaluation. But she persisted by taking the students' perspective: "In my class there are a number of students who write like this. At least 3 or 4."

Her self-exposure was immediately challenged by Y.K.: "Why do you think that the model (for the 'ideal text') must come from the class, and that we should not use an objective model for all our students? This annoys me. I feel that this problem exists only in writing instruction."

The challenge only encouraged the risk-taker to continue her own line of thought: "Because we have better and worse classes. We must work with what we have. There should not be a situation in which no one in the class can reach an 'A'."

The turning point occurred when the reflective assessor suggested that subjective decision-making was taking place in all areas of life. This was the first time that these teachers had viewed themselves as professionals engaged in a problem solving process--just like practitioners in other fields, whose problems are not specific to the teaching of writing or even to teaching. This recontextualization of teachers' experience, presenting it in a generalized manner and a broader context, was an important step in restructuring their expectations of themselves and their environment and in redirecting their attention from external factors to themselves. They needed to come out of the boundaries they had set to their own problem-solving context in order to be able to reexamine their own problem-solving abilities.

Logic

Two claims are made in this event by the risk-taker: that a students' writing should be convincing and that assessment could be subjective and based on a particular class's data at a particular point in its' development (Table 6).

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insert Table 6 about here

Table 6 illustrates how each claim is challenged by speakers of the other paradigm. Since each side's warrants are explicitly revealed by the speakers themselves, or are in other ways accessible to the others, they are immediately opened to discussion. The result is a critical inquiry which starts from an argument on the interpretation of specific data, and

progresses to more generalized and interesting questions bearing upon the viewpoint of each side. This juxtaposition of the two views triggers the remark of the reflective assessor, who concludes that this problem is not unique to teaching, but is part of other areas of life and should be treated as such. The reflective assessor neutralizes the argumentation or makes it less relevant while situating it within the context of assessment in general.

As in the previous event, the reflective assessor (R.L.) is triggered by the direction of the discussion. Y.K. raises a claim ("I feel that this problem exists only in writing instruction") which R.L. cannot accept as collectively tenable. Such a claim undermines the validity of the frame represented by Y.K.'s arguments, and drives R.L. to reframe her own point of view so that it can accommodate the claims made by S.G.

Discussion

In this event, for the first time, the teachers face concepts of the other world view and attempt to use them in their own frame of reference. They measure them against the values of the system they work in. Their inability to deal with the conflict is related to their perception that the problems which came up in the discussions were confined to the area of writing instruction. They finally realize that such problems exist in other areas of life as well--and that problems, like the ideals of 'objectivity' or 'subjectivity', are always relative and, therefore, resolvable. This is a very important step forward in these teachers' development of critical inquiry . They learn that conflicts can be resolved by reframing the context of the situation. Their change depends on their ability to apply this rule to many other areas of conflict.

In this event, for the first time, a problem is posed by the members of the group themselves. The participants evaluate the problem in terms of their own experience and on the basis of more general knowledge. As a result of that evaluation, they are able to reframe their old notions and reach a conclusion that allows for a solution to the problem.

Event 4 (twenty first meeting): On the Experience of the Workshop

Background

The fourth event was initiated by an unplanned visit of the supervisor of language teaching (Appendix 4). One of the participants (R. L.) volunteered to present the workshop to the visitor. She started by describing her school, which she said represented the entire population of the country, and then switched to the history of her professional career.

Content

The main topic of this event is the process of teachers' change. The teachers are saying that they have changed because they now hold a different view of themselves, of others and of the situation (see Table 7):

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insert Table 7 about here

The teachers realized that their difficulties could not be attributed solely to external factors. They gained an understanding of the impact of their feedback on students, and overcame their fear of exposure in front of their colleagues and students. On the whole, the domain of writing became clearer to them and more distinguished from other content domains they were teaching. In contrast to their prior orientation as illustrated in the first event, they now focus on the teacher as an object of change--and talk about their own difficulties instead of those of the students. Rather than blaming the students for their own failure, they now perceive them as catalysts for their own change. Above all, they identify their students' response as the major factor in their change.

Since they have changed, they seek to become change agents for other teachers as well. No longer do they look *out*ward for a curriculum or a set of materials to cause that change; they look *in* ward for their own projection of the change to help them create change in others.

Table 7 strongly implies that in this event the teachers make the connection between change and the ability to reflect on action. They understand the relationships among self-awareness, change, enthusiasm, ability to help others learn, and being alone and feeling good about it. They have clearly adopted the other world view, and this has made them more aware of the change process itself. Most important, they have become aware of the difference between a first-order change, in which they are changed but the system is not, and a second-order change, in which the system is also affected. Because they have undergone a first-order change, they know they will feel lonely until they can transfer this change to the system.

Structure

The fourth event was also initiated by the risk-taker, who opened it with a reference to students' perspective contextualized in her own personal experience. Her account was assessed by two reflective assessors: one generalized the risk-taker's personal experience to two issues in writing instruction--the awareness of the student and that of the teacher--and the interaction between them; the other generalized the experience to the interaction between a teacher's change and that of students or other teachers.

As another illustration of the two-step structure, this event explicated the significance of the interaction with students, with students' writing, and with the development of other teachers in their school. The teachers used the two-step structure to describe their own zone of proximal development; they reflected on the significant interactions at school with their

students and colleagues, and in the workshop with the other participants and the reading and writing tasks.

This event, taking place in an advanced phase of the teachers' developmental route, is an example of the reflexive effect of learning. In addition to learning about their students' learning and about the effect of their instruction, the teachers learned about their own learning and were able to talk about it.

Logic

This discussion is not an argumentation but a series of cohesive practical arguments (Fenstermacher, 1986) on teaching and on teacher training, in ways that are coherent to the new paradigm and whose conclusion is an intent to act (Table 8):

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insert Table 8 about here

These arguments are presented in a narrative form developed cooperatively by the participants. The story has a temporal structure with a beginning, a middle and an end. Within this structure the teachers compare their former warrants with their new ones, and hypothesize about other teachers' difficulties on the basis of their own. While doing so, they support each other's claims. But most important, the warrants on which the claims are based are, for the first time, fully explicated and can be theoretically supported.

Discussion

This event manifests teachers' ability to make the transition from theory to practice. According to their account, they have been able to do so because of several reasons. Their students' enthusiastic response to their attempts to change their way of teaching has allowed them to shift their focus from their students' "problems" to their own. This, in itself, has been a process of inquiry encouraging them to pose important problems and to juxtapose their own way of treating them with those of the new paradigm encountered in life or in published texts. Since students' response is now given more weight, it has become their monitor of whether their application of the new theory was correct, and whether they should try other theoretical constructs of the new paradigm. The use of practical arguments leading to action based upon their new knowledge in a way that corresponds to their students' response and to theory is a significant sign of the teachers' new ability to bridge between theory and practice.

General Discussion

This paper analyzed events in a writing teachers' in-service workshop in terms of content, structure and logic. A content analysis showed that in an unsolicited way, while attempting to deal with workshop tasks, the teachers raised some of the most important

issues of conflict between the two paradigms of teaching: the relationship between product and process, the analogy between their learning and their students' learning, the difference between control and ownership in learning and in teaching, the conflict between their values and the values in which they function, the conflict between objectivity and subjectivity in assessing the situation, the relationship between their professional problems and the problems of other professionals, and the relationship between self-awareness and change. And so, without being aware of Schon's two models of professionalism, they managed to bring up on their own and juxtapose most of the issues elaborated by these models (Table 1).

A structural analysis of the learning events illustrates that the change in teachers' attitudes happened in the following manner. While the teachers reacted to the tasks from the point of view of their old attitudes and old knowledge, one of them volunteered to share a specific teaching experience with the other members of the group. Through her account, she exposed her own problems and difficulties in order to provide evidence that some of these teachers' claims may not fit her new experience. Her unsolicited self-exposure was often followed by expressions of surprise by other members of the group. But more important, it triggered a reflective reassessment of the risk-taker's experience as well as the views expressed by the other participants in the discussion. These two turns of exposure and risk-taking followed by reflective assessment (see Figure 1) were identified as the basic structure of learning events illustrated in the four excerpts of group discussions.

This learning process shows certain resemblances between the teachers' learning and the learning of young children. Wertsch (1985, p.166), who identified developmental events in mother-child interactions, drew up five conditions for such developmental events to take place in mother-child dyads:

> (1) A cognitive readiness on the part of the child, (2) a willingness on the part of the adult to transfer strategic responsibility to the child, (3) adults' use of "reflective assessment" to inform the child of the significance of his or her behaviors, (4) the explicitness of the adult's directives, and (5) the possibility for the dialogic structure of the interpsychological functioning to be mastered on the intrapsychological plane through differentiation of language functions.

We were aware of the eminent differences between the zone of proximal development constructed between mother and child to form new intellectual functions and that emerging among adult practitioners to construct possibilities for invoking already developed intellectual functions. Analysis of the data, however, showed that Wertsch's conditions for learning in early childhood existed in each of these events as well. For example, in spite of the teachers' initial resistance to intervention and the school-like tasks it involved, there was

a cognitive readiness for change. This readiness was manifested in their ability to overcome their initial fear of exposure and, by the third meeting, voluntarily share their classroom experiences with the group. In the workshop, they were encouraged to try some of these tasks in their classes and to share strategic responsibility for their teaching with their students. The students' response was usually very positive. In addition, the workshop tasks and reading material provided explicit guidance for the direction of change, and the group dynamics provided the opportunity for a dialogue between the interpsychological functioning to be mastered and the intrapsychological plane of discourse. During these group discussions, the teachers' concepts or misconceptions became accessible for conscious reflection and manipulation. The group dynamics allowed each of them to feel that he or she was not alone in this process, and that this was an experience that could be shared and extended beyond the limits of the group. It is perhaps because of these conditions that our action was successful.

Sociocognitive theory provided us with a framework though which we could look at group discussions as an interrogatory discourse conducted by the participants themselves about their interactions, with a source of information: the situation facilitator (a coach or a visitor to the workshop), texts, workshop peers, students or colleagues. In addition, it drew attention to the fact that each participant had her own way of taking from the workshop and class experiences and interpreting it so that the inter- and intrapsychological faculties interacted in a way that was integral to each participant's nature and interpretive processes. Finally, the sociocognitive view allowed for the isolation of these teachers' zone of proximal development (see Figure 2).

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insert Figure 2 about here

All of the data indicated that the zone of proximal development for these teachers extended the context of the group activity in the workshop; that it invariably included interactions in a context outside the group; in their schools; and that it included the following interactions: te .cher-situation facilitator (coach, visitor) interaction; teacher-peer and teacher-text interactions in the workshop; and teacher-student, teacher-colleague and teacher-text interactions in school. Furthermore, as illustrated in Figure 2, the zone of proximal development for these teachers was larger and more complex than the context of the group activity, and these two learning environments--in the in-service program and in school--scaffolded each other.

The four episodes illustrated that the interaction between the two environments was a powerful source of interrogatory discourse for the participants. It provided them with the

context in which to conduct the discourse, and with a means with which to reframe the new professional knowledge they acquired. In Vygotskian terms, the interaction with students became the scaffolding for constructing the current understanding of new ideas, for reflecting upon them, and for comparing them with the information coming from other sources. At the same time, the interaction with their coach and peers and their own writing and reading in the workshop, provided the teachers with a scaffolding for their experimentations at school.

These learners started out clearly experiencing the two contexts of the workshop and their school, or those of "theory" and "practice", as separate. The interaction with students and with students' writing while trying out new theoretical concepts enabled them to incorporate their teaching environment into their problem-solving system and to decontextualize this experience. Students' response made salient all discrepancies between teachers' pedagogical knowledge and the new ideas presented in the workshop. Yet, the events showed that this salience was not sufficient for teachers to reorganize their thinking; other conditions in the group dynamics made that possible. In each of the episodes, two participants (who were not necessarily the same in each of the events) enabled the learning event to take place. The risk-taker, on the basis of students' response to her unprepared experimentation of a new idea, turned the focus of the discussion to the response these teachers were getting from the students, thus shifting the perspective of the discussion to a different context. The reflective-assessor evaluated the significance of the risk-taker's account and described it in decontextualized, generalizable terms. Although the situation facilitator (the coach) was instrumental in organizing the tasks for the teachers and inviting visitors to the workshop, she had no authority over the group discussion. The workshop participants maintained ownership of the structure of the learning events.

During the reframing of the context of the discussion, its focus shifted from teachers' old pedagogical knowledge to students' response to the new teaching tasks, and then to introspection. Such a process bears a resemblance to adult-child interactions as described in various studies. Wertsch (1985, p.165) comments that "while forms of interpsychological and intrapsychological functioning differ significantly in these studies, there seems to be at least one common tendency in how the children in these studies come to master the situation definition of the task: they first participate in the execution of the goal-directed task on the interpsychological plane, and only subsequently do they recognize and master the strategic significance of their behaviors. Rather than understanding the task and then doing it, the children seem to have done the task and then understood it." The above excerpts of the teachers' discussions show that the same was true for them. In fact, these transcripts suggest

that knowledge restructuring in teacher in-service training occurs under the following conditions:

1. When skill or strategy training is accompanied by tasks given to teachers to experiment within a social context which they understand and upon which they have control, as well as by opportunities to reflect upon these tasks.
2. When action comes before reflection.
3. When students' response can be used by the teachers as a scaffolding for teachers' knowledge restructuring.

Furthermore, four manifestations of such learning were identified in the transcripts: (1) risk-taking involving unsolicited self-exposure; (2) expressions of surprise at outcomes of risk-taking; (3) the ability to introspect or conduct a theory-based reflection on these experiences; and (4) interest in becoming agents of change and working with other teachers. Although this paper did not attempt to show the progressive trail of growth in these learning events, the transcripts show that the more advanced these teachers are in their process of growth, the more they reflect on their own process of change and express interest in becoming agents of change for other practitioners.

These excerpts are chronologically sequenced and may, therefore, indicate a developmental trail of cognitive growth in which the structure is gradually refined. In the first event, the risk-taker and reflective assessor can be identified, but they have a very limited impact on the group's thinking. Although the risk-taker triggers the event and the reflective assessor picks up the risk-taker's challenge, they do not manage to start a problem-solving process within the group. In the second event, the risk-taker is an outsider; right from the start, there is a conflict between her and the group, which starts the group on a problem-solving route. The problem she poses triggers a meta-comment on the old point of view by the reflective assessor, which, in turn, causes the other members of the group to reflect upon their own viewpoints. In the third event, the risk-taker is again a member of the group. This time her impact is strong and she carries on the argumentation throughout the event. In the fourth event, the teachers who speak serve as both risk-taker and reflective assessor while constructing different angles to the same view point.

Logic

The use of Toulmin's model in analyzing these teachers' processes of critical inquiry allowed us to follow their warrants and explicate (when they did not do so) to indicate where and why the processes failed and where they were successful. Moreover, such analysis helped us perceive the teachers' progress in handling the process itself. We found that as the participants became adept at argumentation, their arguments became more formed. Gradually the teachers learned to pose problems, to discuss them in relation to data, and to reach logical

conclusions. Finally, their arguments turned into instances of practical logic (described by Fenstermacher, 1986), which conclude by expressing an intent to act. In addition, the argumentation became increasingly coherent in terms of the new paradigm of writing instruction.

We saw that in the first event the teachers seemed to be going in circles, unable to construct a consistent argumentation. Different claims were raised without explicating or regarding their warrants in any other way. Although no one was able to identify the problem, solutions were offered: more of the same.

In the second event, there was an expressed contradiction between their view and a visitor's view of writing instruction. In assessing the conflict, a member of the group said that they were aware of an alternate way of teaching, and that to practice it they would need to undergo a radical process of change. There was not yet an expressed intent to change.

In the third event, the conflict formed within the group with no outside trigger. The teachers began to see how different models of teaching become eminent within their own group. Their warrants were explicated and reassessed within a larger context of professionalism.

The fourth event was a reflection on their own change process and an assessment of its value for them, for students and for the teaching situation. This meta-reflection explicated the warrants they initially held, and juxtaposed them with the ones they now hold. And as a result of this reflection, conclusions were drawn with an expressed intent to act within the framework of the new paradigm.

Educational Implications

Much has been written about what works and what does not work in teacher education. Our study, like those of Hollingsworth (1989), Guskey (1986) and Joyce and Sowers (1982) has shown that given the appropriate contextual conditions, experienced teachers can reframe their orientations towards teaching and learning in a way that may challenge the existing paradigm. Further study should look at these conditions. For example, Joyce and Sowers claim that the essential five components of in-service education programs are: theory, demonstration, practice, feedback and application with coaching. They do not say in which order these components should be administered, how to help the teachers bridge between theory and practice, what kind of feedback the teacher needs and where the feedback should come from.

Our study included the five components described by Joyce and Sowers--plus group discussions of the implications of applying the new ideas in the teachers classrooms, which became a very important factor in these experienced teachers' development. It provided an opportunity to reassess ideas formerly raised by theory and by workshop practice in the

authentic context of these teachers' action. Discussions of in-class application of the new ideas became the context for developing problem-solving skills in critical inquiry. The discussions created two conditions formally identified by Fullan (1982) as the prerequisites for success in professional development. They allowed the teachers to focus on their own need, and they gave the teachers the opportunity to interact with each other, share ideas, and help one another. In order to further determine the importance of this component of the in-service program, it would be interesting to compare its content, structure and logic with those of other components of the same in-service program.

Our study illustrated how, during the discussions of in-class experimentation, the participants learned to interact in a manner that was relevant to both what they thought and what they did. In that particular context, it was helpful when teachers who held different points of view participated in the same event. By challenging each other's point of view, they initiated their own moves towards the reframing of the discussion and the restructuring of their own prior beliefs. This confirms Hollingsworth's (1989) finding that teachers should not necessarily be placed with others with whom they agree, or even that the program should a-priori include teachers who can model the program's philosophy. Given a flexible approach to this segment of the program, experienced teachers can use their disagreements to direct their own process of critical inquiry.

We have also shown how, quite naturally, each event evolved around a specific topic. In theory, all of the topics are interrelated as different aspects of the same agenda. Yet the teachers chose to deal with them one at a time. This suggests that there may be some sequential order that is right for a particular group of teachers, which would allow them to attend separately to different aspects of the same problem without creating a cognitive overload.

To summarize: although limited by the particular cultural context of the population (Israeli high-school teachers), its focus on a specific domain (writing instruction), the single program studied and the small group of teachers participating, our findings indicate the conditions for change in experienced teachers' in-service training. They suggest that knowledge restructuring for experienced teachers occurs under the following conditions:

1. When skill or strategy training is accompanied by tasks given to teachers to experiment with in a social context which they understand and upon which they have control, as well as by opportunities to reflect upon these tasks.
2. When doing comes before reflection.
3. When students' response can be used by the teachers as a scaffolding for teachers' knowledge restructuring.

Our work has demonstrated that teachers' knowledge restructuring feeds on experimentation, interaction and critical inquiry. The educational implication of this finding is important. Rather than focusing on providing a theoretical background demonstration, practice and feedback, it is the responsibility of the coach to identify the teachers' needs and to facilitate the above conditions.

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Figure 1

The two-step structure in teachers' developmental events

Step 1: Risk-taker exposes herself and shares an unsolicited account of her teaching experience.

Step 2: Reflective assessor decontextualizes the discussion and generalizes on it.

Figure 2

Teachers' zone of proximal development

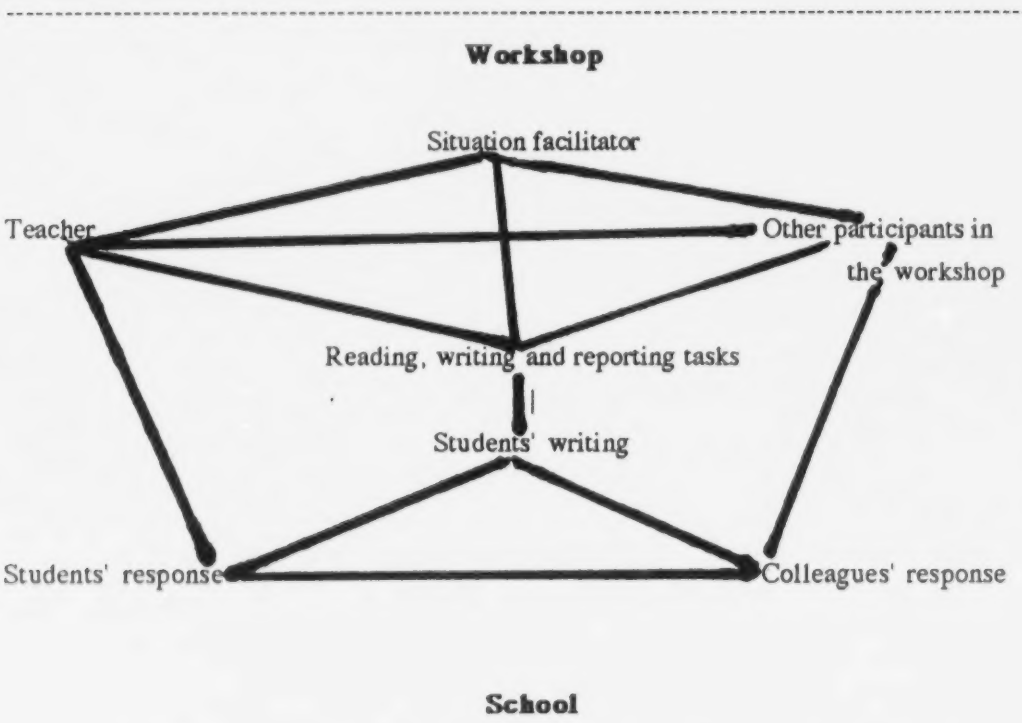

Table 1

Writing Instruction According to "Technical Rationality" and to "Reflection-in-action"

Characteristics	Technical rationality	Reflection-in-action
Orientation	Objectivist	Constructivist
Goals	Product	Process
Expectations	Ideal text	Expert writer's strategies
Intervention foci	Spelling, handwriting grammar, usage, text	Discovery of relevant topic & audience, evaluation of text produced so far
Task ownership	Teacher	Student
Teacher's responsibility	Provide rules, correct errors and evaluate written product	Provide frequent opportunities for writing and real audience response, prompt and coach interactions with other audiences, assess process and evaluate revised product.
Task source	A central curriculum	Created by the learning situation
Responsibility for problem-solving	Teacher	Teacher-student-peers.
Evaluation	External	Teacher-student-peers.
Criteria for evaluation	Objective and finite	Subjective but valid.
Incentive for teacher and student	Students' grades	Satisfaction from the ability to deal with new problems in real time. Publication of a text.

Table 2

Teachers' Attitudes Toward Self, Others and the Teaching Situation

Self	Others	Situation
We try but do not succeed. As a result the status of writing instruction is low	Students are to blame because they lack knowledge and motivation. The successful student must have innate talent. For such a student writing is easy.	Students should be better informed of features of the ideal text.
We do not have the appropriate tools for teaching and criteria for evaluation.	The system is to blame for not providing us with textbooks and objective criteria for evaluating writing.	We need ready-made short-term solutions for our problems.

Table 3

Teachers' argumentation in Event 1 (part 1)

Actual argument

The student expresses herself well orally, but is a poor writer. (Claim)

This particular text is surprisingly well written. (Data)

This is because her awareness has been sensitized. (Claim)

Our aim is to diagnose students' problems so that we can treat them.(Warrant -Implicit)

We have to disregard this particular text because it is not representative of her usual writing problems. (Qualifier)

We must look for her writing problems (Conclusion)

Ideal argument (According to Toulmin's Model

The student expresses herself well orally, but is a poor writer.(Claim)

This particular text is surprisingly well written.(Data)

This is because her awareness has been sensitized. Her awareness is now actually better than ours. (Claim)

Self-awareness is important for writing development. (Warrant)

We should use her self-awareness to coach her writing.(Conclusion)

Table 4

Teachers' argumentation in Event 1 (part 2)

Actual argumentation

Teachers (Voice 1): The student has a problem which we must detect and treat. (Claim)

Y.K.(Voice 2): She needs encouragement. I asked her to write more...(Claim)

Teachers (Voice 1): She has a problem with intellectual things. She can describe feelings.(Claim)

Y.K.(Voice 2): This topic was right for her. (Claim)

Teachers (Voice 1): We should give her a plan.(Claim)

S.R.(Voice 1): I have difficulty defining her problem. This maybe beyond our range.(Claim)

Ideal argumentation (According to Toulmin's Model)

Teacher C.: The student has a problem with confidence.(Claim)

Y.K.: I did encourage her and asked her to write more...(Data)

A good way to encourage students is to let them write about what they know. (Warrant)

R.S.: Why is she having difficulty in organizing her writing in biology while she did not have such difficulties in this writing task in which she had to describe feelings? (Claim - problem setting)

Y.K.: This topic was right for her. (Claim). When students write about topics that are right for them, their texts (like their thought processes) are more organized. (Warrant)

Teachers: You must ask her to write more about herself in order to help her gain the confidence that she lacks. (Conclusion)

Table 5

Teachers' argumentation in Event 2:

Y.C.: I teach writing through dialogue journals (Data). It is a better way of teaching writing than the traditional way (Claim)

Teachers: We need to teach responsible structured writing. (Counter Claim). Such writing can be taught only by presenting the students with model texts or model writing plans. *Teaching writing through dialogue journals does not do that. (Warrant- Implicit).*If you do it for several years, students are not taught to write on important topics. (Conclusion)

Y.C.: Students need to write. (Claim) There is no need to teach them. (Claim) They learn from experience *and guidance.* (Warrant)*According to this view they could write dialogue journals through 12th grade.*(*Conclusion-Implicit)*

Teachers: Your student maybe better writers, but you don't deal with certain skills. You have to prepare them for the matriculation exam. The exam has its own criteria. (Counter Claims)

School must prepare for communication skills which are unrelated to real-life communication. (Warrant-Implicit)

Y.C. explains that in the journal students write about a wide range of topics that they themselves initiate, such as personal problems, pets, interpersonal relationships learning problems as well as writing problems. Many of these topics do appear on the matriculation exams. (Data) *Students' ownership of their own writing is important. (Warrant-implicit) Dialogue journals are efficient because they allow the students to experience writing on a wide range of topics, that do not necessarily differ from those which appear on the matriculation exam, while letting them maintain ownership of their own writing. (Conclusion-Implicit)*

A.Z.: As a teacher, you cannot respond to students the way you feel.(Counter Claim)

Y.C. What is wrong with that? (Problem posing)

A.Z.: Things should be more controlled. (Warrant)

Z.B. (realizing that they cannot say what is wrong with that): Suppose more mature topics come up as students themselves mature. They will write and we will respond and while doing so we will show them how to elaborate. (Hypotheses) *The problem with teaching writing through dialogue journals is not that it does not comply with the students' needs or with the demands of the curriculum. It is a teachers' problem. (Warrant-implicit).* In order to be able to do so we must change.(Conclusion)

V.M.: What we have been doing has not helped our students anyway. We put in a lot of work writing comments on their compositions, but they disregard them.(Data)

A.Z.: I have also tried to conduct dialogue journals with my students.They wrote and did not want me to interrupt. For the first time they talked to me. I enjoyed it.(Data) We need to experience a metamorphosis so that we can learn to enjoy what our students like to do. (Conclusion)

Table 6

Argumentation in Event 3:

S.G.: I did not like this student's text, because it was very short, undeveloped and unconvincing.

Y. K.: What is 'convincing'? (Problem posing). *'Convincing' is a very subjective criterion. (Claim-Implicit) Subjective criteria are unreliable. (Warrant-Implicit). The 'convincing' criterion is, therefore, an undependable evaluation criterion. (Conclusion-Implicit)* We need an objective evaluation scale that would stand by itself. (Conclusion)

S.G.: In my class there are a number of students who write like this. (Data) *Evaluation criteria must come from the writing of the specific class. (Warrant-Implicit).*

Y.K.: Why do you think that the assessment model must come from the class? (Problem posing) We need an objective model for assessing writing. (Claim) This problem is specific to writing instruction.(Claim) The difficulties or writing teachers are unique. (Warrant)

S.G.: We have better and worse classes (Data) and we must be able to assess their development. (Claim) *Development is always relative (Warrant-Implicit)* Each student should be able to reach an A. (Conclusion)

R.L.: The problem of subjective versus objective criteria exists in all areas of life. (Claim) *Every assessment we make in life is subjective, no matter how objective we try to be. (Warrant- Implicit). There is nothing wrong with saying that you didn't like the student's text, because it was not convincing. (Conclusion- Implicit)*

Table 7

Teachers' Attitude Towards Self, Others and the Teaching Situation

Self	Others	Situation
Teachers' response affects students' writing, their thought processes and their view of the world.	Students can learn much more than they have, if we stop focusing on their mistakes and help them become aware of their writing process.	Teaching is building an atmosphere of trust and helping the student ask: 'Where am I going?', 'Who is my audience?, etc.
It was our fault that they could not write well. We have changed, and are enthusiastic of our work.	Students want to write. They prefer writing classes over literature classes.	Teaching makes a difference.
Our duty is to pass our enthusiasm to other teachers.		It is impossible to treat all students. You have to start with the teachers.

Table 8

Teachers' practical arguments identified in Event 4 (According to Fenstermacher)

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1. On the topic of teaching:

As teachers we want to teach in ways that yield much student learning.

For this we need active student participation in the learning process.

Building on what the student knows and wants to know yields active student participation.

Focusing on the student's text is a successful way to build on what he or she knows and wants to know.

Therefore we will organize our teaching around the students' written text.

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2. On the topic of teacher training:

Achieving teachers' change is difficult.

You can do it only if you have undergone such change and can project it.

We have undergone such change

It is important that *we* try to change others.

Appendix 1

Event 1 (part 1):

Y.K: "I really don't know where to start. There were many interesting texts. For example, this girl. Hers is an exceptional story, because I think she is very intelligent. She expresses herself very well orally, but her writing is very poor; you cannot get a thing out of her. I asked the science teacher, and she said the same thing: 'I cannot follow what this girl writes, yet I know that she understands my classes'.

The girl is very pleasant and her expression is friendly. She projects communication and sympathy, and this attracted me to what she wrote:

'This year the writing classes are more helpful than before. Yet I feel I cannot get the best out of them in the pressured condition of writing in class. The teacher's explanations help me in a general way, but I would have liked them to focus on my particular problem. I find it difficult to impress with my writing. I do not know how to translate my thoughts and the flashes of my ideas into words and paragraphs. Apparently the particular form the composition has to take, the order, the precision--these cause my problem in writing--this need to fit things into a frame, to put *x* before *y* for the purpose of getting a high grade puts pressure on my school writing.

I like to write by pen, because it feels like painting. I like to write in a green quiet environment...I don't like to write about pre-defined topics. It is easier to write on things that are seemingly unrelated.'

At school I pick the topic on which I have the greatest knowledge, or where my opinions are more defined. I also prefer topics close to my heart. In the beginning, I make a list of whatever I know. The problem starts when I have to develop the list into paragraphs. The greatest difficulties arise when I have no ideas and ways to find solutions.

I liked the language classes, because they widened my general knowledge. Writing classes were almost never helpful."

A. Z.: "She is a skilled writer".

S. R.: "She is not a skilled writer. Her awareness has been sensitized."

A. Z.: " Her self-criticism is harsher than our criticism."

Event 1 (part 2):

R. L.: "She has a problem with her audience. She does not know what to select from her knowledge and how to organize it for her teacher. This is a problem of confidence. I would strengthen her confidence in what she knows and show her how to adjust it to her audience..."

Y.K.: "I am glad you said that, because I did go to her and tell her that her writing was wonderful, and asked her to write me more..."

Z. B.: "I don't understand what you are talking about. I see her problem differently. She has an organization problem. She does not know how to organize her ideas, and this is a problem that many other students have. As a result, they develop a negative attitude toward the writing task."

R. S.: "You have to consider that even in biology, where she knows the subject, she has difficulty writing. Why is she having difficulty in organizing her writing in biology and did not have such difficulty in this writing task where she had to describe feelings? She must have problems with intellectual things."

Y.K. "This topic was right for her".

N. Z.: "That means that one of the instruments we could give her is..."

V. M.(interrupts): "A plan".

R. S.: " In biology she gets a plan."

S. R.: "I have a problem. I understand that this student has a difficulty but I do not have the tools to identify it, to focus on it. How should I define her problem when the definition may be psychological and unrelated to what she has written here?"

Appendix 2

Event 2:

Y.K..: "I have a problem. Without arguing against any thing, I have a problem with what has not been done. What about the need to teach them responsible structured writing?"

V. M. : "You do it for a whole year! If you do it at 7th grade, you are not going to do it at the 8th!"

Y.C.: "There's no end to this source. It is a source of life".

V. M. insists: "Are you going to do it at the 10th? And the 11th? They need to write a composition about some topic".

Y.C.: "They learn to write. There's no need to teach them. They should write".

D. S..: "What happens when they reach the 12th grade? What happens when there is a matriculation exam? Your students at the end of the 9th may be better writers, but you don't deal at all with certain skills".

Y.C. "Why not?"

D. S.: "The question is not whether you enjoy it or whether the student enjoys it. It is a question of responsibility. Do you feel that your students, after corresponding with you for three years in a dialogue journal, are prepared for a matriculation exam the next year? The exam has its own criteria".

Y.C. explains that in the journal students write about a wide range of topics that they themselves initiate, such as personal problems, pets, interpersonal relationships, learning problems as well as writing problems.

Y. K.: "You overlap with the counselor's job".

Y.C. tells about a student who claimed to have nothing to write about. She says she suggested that he write about a dream.

A. Z.: "Why did you choose that?"

Y.C. "Because I felt like it".

A. Z.: "But as a teacher, you should never say 'Because I felt like it'."

Y.C.: "What is wrong with that?"

A. Z.: "It is all right. I did not say it wasn't. Yet, it seems that things should be more controlled."

Z. B.: (in an attempt to find a solution): "You are telling about your experience with 7th, 8th and 9th graders. If we do it in the 12th, I suppose that more mature topics will come up. They (the students) will write and we will respond and while doing it we'll show them how to elaborate, all by way of correspondence.

We are still captives of our own misconceptions--if we try it, I am sure we will succeed."

V. M. picks up from there: "I envy your students and you. With my students, I write comments to their compositions, they get their writing back, look at the grade and throw it away. I say: 'What about all the hours of work that I have invested?' They don't even look at it. Your students read the comments and learn. I think it is incredible. It is really exciting."

A. Z. takes another turn in the discussion and tells of her experience in dialogue journal writing with her students: "We need to experience a metamorphosis: I have to tell you what happened yesterday. Imagine that my students said to me: 'Teacher, you interrupt our writing.' I said: 'Excuse me, I will keep quiet.' Seriously, I'm telling you. This happened to me yesterday for the first time. It happened because they wrote to me, I enjoyed it. They talked to me."

Appendix 3

Event 3:

S.G. (referring to an example of unsatisfactory writing): "I asked the students for a personal impression, but this one is very short, undeveloped and unconvincing."

Y. K.: "What is 'convincing'? This is not a criterion. It is a very subjective thing. This is a way of legitimating prejudice. I am looking for an evaluation procedure where I will not depend on subjective criteria."

J. R.: "Exactly. This is the problem."

D. G.: "The example we had here may be esoteric. We need an evaluation scale that would stand by itself."

In defence of the examples of students' writing she brought to the workshop, S.G. responds: "In my class there are a number of students who write like this. At least 3 or 4."

Y. K.: "Why do you think that the model (for the ideal text) must come from the class, and that we should not use an objective model for all of our students? This annoys me. I feel that this problem exists only in writing instruction."

S.G. " "Because we have better and worse classes. We must work with what we have. There should not be a situation where no one in the class can reach an 'A'."

R. L.: "We face problems of subjective evaluation in all areas of life."

Appendix 4

Event 4:

R.L."The topic of composition writing, of oral and written expression, has always been tied to that of comprehension, and there has always been frustration in that area. There was a feeling of vagueness, that we did not know what to teach. We kept going to in-service programs and taught according to what we saw there, but the results were not satisfactory. The students did not progress, and that showed in their matriculation exams. With low level students, there was a feeling of complete despair, that there was nothing to do and that we could not achieve any change. As for me, I have been a teacher for 32 years. It causes a feeling of burnout. Six months ago I applied for early retirement because of the feeling that my work has made no difference. I started working with such idealism, such enthusiasm, I invested so much energy...Then I was offered the opportunity to join this program and I started, like everybody else, with a feeling of doubt, hesitation and great anxiety. Then something very interesting happened. First of all, my attitude toward the students changed. This attitude that, I admit now, bordered on disrespect, changed so dramatically. I realized that I was dealing with people who could learn much more than they had ever done. I have proof that children who had never written, who were afraid to write because of their mistakes, were starting to write, to become interested in writing. I discovered that I was not only affecting their writing abilities but also their thought processes, their view of the world and their self-respect. I now blame myself for not succeeding. I have reconsidered retiring."

N.Z. took off from that point: "....there are two issues in writing instruction: There's the awareness of the writer. We have to help them reach this awareness. This cannot be done by saying to them: 'In every composition there is a beginning, a middle and an end, and there are different types of beginnings.' This will not work at all because the awareness of the student is actually to the problems of "Where am I going? Who is my audience?" etc. But an additional sort of awareness is that of the teacher. There is a change in teachers' awareness. We came here to get recipes. We got a complete change. And this is actually our duty outside this workshop. Just as we are enthusiastic to do it, we could pass this enthusiasm on to other teachers".

Z.B: "In my school, as in many other schools of the intermediate and advanced level, students are underachievers in writing development. Because it is impossible to

treat all students, it is important to start with teachers. At this point I would like to stress that in order to treat teachers, the teacher trainer must project that he or she has changed and that this change was so meaningful that it could affect other teachers as well. Otherwise, they will not trust the trainer. I feel that because of this program I have become, it is difficult to say, I have become a prophet. "A composition prophet", I call myself sometimes. I don't want to use superlatives that will ultimately seem exaggerated, but I feel that I am in the midst of a great awakening. On the other hand I am alone, and there is nobody to help me... The students now prefer writing classes over literature classes. They can't wait for their journals. They beg me. I already wanted to stop. I am tired. I read these journals till 2 or 3 o'clock in the morning. It's exciting...If before, when I gave them a topic for a composition they used to say: "Leave us alone, we have nothing to write about". Now they sit for three hours and write. When I taught them a few revision strategies they suddenly asked: "Why didn't we start doing this in first grade?"